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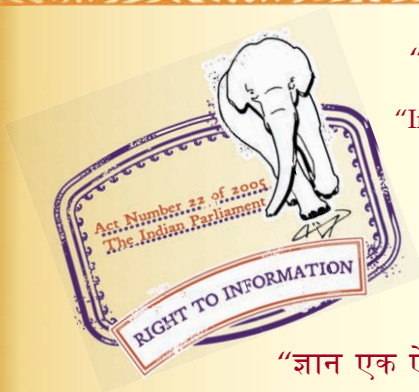
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IS 3047 (1965): Accuracy requirements for volumetric container filling machines used in petroleum trade [PGD 26: Weights and Measures]



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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS: 3047 - 1965

Indian Standard

ACCURACY REQUIREMENTS FOR
VOLUMETRIC CONTAINER FILLING
MACHINES USED IN PETROLEUM TRADE

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ACCURACY REQUIREMENTS FOR VOLUMETRIC CONTAINER FILLING MACHINES USED IN PETROLEUM TRADE

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Indian Standard

ACCURACY REQUIREMENTS FOR VOLUMETRIC CONTAINER FILLING MACHINES USED IN PETROLEUM TRADE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 9 March 1965, after the draft finalized by the Commercial Weights and Measures Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 At the instance of the Standing Metric Committee (now the Directorate of Weights and Measures), Government of India, a number of Indian Standards on testing the accuracy of commercial measuring instruments used in petroleum trade are being prepared by this Institution. This standard covers the general and test requirements of the volumetric container filling machines used in petroleum trade. Besides, the series of standards for accuracy of commercial measuring instruments at present comprises the following:

- *IS : 2801- Accuracy requirements for bulk meters used in petroleum trade.
- *IS : 3032- General requirements for testing the accuracy of commercial measuring instruments used in petroleum trade.
- *IS : 3033- Accuracy requirements for dispensing pumps used in petroleum trade.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the accuracy requirements for volumetric container filling machines used in petroleum trade.

*Under preparation.

†Rules for rounding off numerical values (*revised*).

2. DESCRIPTION

2.1 A volumetric container filling machine shall consist of a basin or basins, the capacity each of which shall depend on the capacity of the containers, which it is intended to fill. The operation shall consist of first filling the machine to the required level and then emptying out the contents into the container or containers.

3. GENERAL REQUIREMENTS

3.1 The volumetric container filling machine shall comply with the general requirements specified in IS : 3032*.

3.2 The design of the filling machine shall be such that the measured quantity shall be entirely drained out on opening of the delivery valve.

3.3 The basin shall be provided with adequate sight glasses, observation windows, cut-off valve or other means indicating clearly that the basin or basins are properly charged.

3.3.1 The basin shall be provided with a suitable device, such as a displacer, to enable adjustment of the capacity of the basin.

3.4 Every flexible hose for discharging liquid from the basin together with the rigid delivery pipe which empties itself on discharge, shall be so arranged as to provide for ready and adequate drainage of the liquid.

3.5 The filling machine shall be rigidly fitted on a stand.

3.6 The walls of the basin shall be strong enough as not to cause any appreciable deflection due to the pressure of the liquid.

4. TESTS

4.1 All volumetric container filling machines shall be tested for accuracy of discharge as follows.

4.1.1 A volumetric container filling machine shall be tested under the actual working conditions with a suitable liquid preferably the one which the instrument is intended to deliver.

4.1.2 Before checking a volumetric container filling machine, the inside of the basin or basins and the discharge hose and pipe shall be wetted by filling the machine and emptying.

4.1.3 For testing volumetric container filling machines, a standard test measure shall be used.

*General requirements for testing the accuracy of commercial measuring instruments used in petroleum trade (*under preparation*).

4.2 The procedure for testing the accuracy of volumetric container filling machines shall be as follows:

- a) The standard test measure shall first be filled to full capacity in order to wet all inside surfaces. It shall then be emptied and completely drained.
- b) The machine shall then again be filled to the full capacity.
- c) The contents of each container of the machine shall be measured with a standard test measure/measures and the quantity so measured will indicate that the capacity is:
 - 1) within the permissible error, or
 - 2) beyond the permissible error.
- d) If c(2) be the case, the container shall be adjusted until the errors are brought within the permissible limits; and shall be repeated until the filling machines give two consecutive deliveries within the tolerance limits.

4.3 Every container of the filling machine shall deliver correctly within the limits of tolerance specified in 4.4.

4.4 The permissible errors shall not exceed the limits specified below:

<i>Capacity</i>	<i>Maximum Permissible Error in Excess only</i>
10 litres and above	0.1 percent
Below 10 litres	0.2 percent

5. SEALING

5.1 The volumetric container filling machines shall be provided by the manufacturer with a plug/plugs or stud/studs of soft metal to receive the stamp or seal of the verifying authority. Such plug/plugs or stud/studs shall be provided in a conspicuous part of the machine and shall be made in such a manner as to prevent its removal without obliterating the seal/seals.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Conversion
Force	newton	N	1 N = 1 kg·1 m/s ²
Energy	joule	J	1 J = 1 N·m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V·s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

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